operation, but should pick the cases at operation that he believes can be done with safety to the patient by the one-stage procedure.

Aspiration and drying of the interior of the sac at operation, and lighting of the sac with the esophagoscope by an expert esophagoscopist during operation—as mentioned by Babcock and Chevalier Jackson—should be of value during this procedure.

It also occurs to me that, after separation of the sac, if it is not too large, it might possibly be inverted into the esophagus with the aid of the esophagoscopist, and the sac neck closed externally by well-placed sutures, and the sac excised from the interior of the esophagus by the esophagoscopist. Whether this is a rational procedure I do not know, but it seems that it might lessen the danger of contamination of the mediastinum, since the esophagus would be closed externally before any excision of the sac was done.

❦

F. B. Settle, M. D. (117 East Eighth Street, Long Beach).—Doctor Shepard's paper is very timely, since it brings to our attention a condition which is not common in private surgical practice, as a rule, the average surgeon seeing only an occasional case during the year. His comments on the etiology, the types, and the symptoms are adequate and do not require reiteration.

I concur in his diagnostic and preoperative procedures, but also believe that a direct esophagoscopic examination is of great value in determining the size of the opening of the diverticulum, the presence or absence of ulceration of the esophagus, and the possible etiological factors entering into the formation of the weakened muscular wall at the junction of the pharynx and esophagus. The swallowed string may be used in conjunction with the esophagoscope.

Doctor Shephard's modified technique for a one-stage operation is a definite contribution to the surgical treatment of esophageal diverticuli, since, insofar as I know, his use of the traction sutures is original. This method should add materially in accomplishing an asceptic operation, and in preserving a normal contour of the lumen of the esophagus. The use of a small right-angle, crushing clamp to the neck of the sac, excising the sac with a cautery and inverting the stump with a running suture, affords an ideal closure of the opening. I have used the small right-angle, cystic duct clamp in a similar manner on several occasions, and have found it satisfactory, both in the one-stage operation and in the second of the two-stage procedures.

Regardless of the method of technique I believe that the most important factor is a careful and minute freeing of the fibers of the inferior constrictor and cricopharyngeus muscles from around the neck of the diverticulum, securing good, free mucosa, thus avoiding possible sacculation which might otherwise be overlooked and cause recurrence of the diverticulum, a condition simulating the recurrence of inguinal hernia. I have also found a loop, similar to the type used by the eye-men, to be of great assistance in magnifying the field of operation.

I think that one should adopt either the one- or two-stage operation, depending upon the individual case, the condition of the patient being the determining factor. Oftentimes in elderly, emaciated patients the first of the two-stage procedures seems sufficient. This was called to my attention a number of years ago in a middle-aged man who, following the first of a two-stage procedure, was forced to leave the hospital because of death in the family. At the second operation, some six or eight weeks later, there was only a small remnant of the original sac. I have doubted the necessity of removing this remnant.

It has, of course, been noted at the second of a two-stage procedure that the sac is often smaller, contracted, and somewhat indurated. I have since followed only the first of the two-stage procedure in two other instances, the patients being apparently relieved, and refusing to submit to the second operation.

A cervical block, either alone or combined with direct infiltration, affords an ideal anesthetic. However, if the sac is difficult to locate, inhalation anesthetic and the use of an esophagoscope are of great value. I believe that a longitudinal incision along the anterior border of the sternomastoid muscle gives a freer approach, and if a two-stage procedure is selected it becomes much easier to anchor the fundus of the diverticulum well above the opening into the esophagus. This is a very important factor in establishing free drainage of the sac and permitting drainage of the lower angle of the wound when mediastinal contamination might be suspected.

I believe it very inadvisable to twist or ligate the neck of the sac in the first of the two-stage procedure, and penetration of the lining of the sac with suture should be avoided.

Prolonged postoperative feeding with a Levine tube is of great value. I have found dilatation of the esophagus unnecessary following surgical treatment for esophageal diverticuli, either in the one-stage, or following the second operation of the two-stage procedure.

GONADOTROPIC HORMONE OF PREGNANT MARES' SERUM*

ITS CLINICAL USE IN GYNECOLOGY

By George Joyce Hall, M. D.
Sacramento

Discussion *by L. F. Hawkinson, M. D., Oakland; Sheldon A. Payne, M. D., Los Angeles.*

THE announcement by Aschheim and Zondek,[1] in 1928, of the discovery of a gonadotropic substance in the blood and urine of pregnant women initiated an intensive search by other investigators for gonadotropic hormones in the body fluids of many species of animals.

In 1930 Cole and Hart,[2] of the University of California, reported, in the first of a series of papers, that the blood of the pregnant mare, between the 40th and 150th days of gestation, contained a hormone which they thought was similar to that found in human pregnancy urine.

Further papers in their series, as well as reports by numerous other investigators, notably Evans,[3] confirmed the presence of a gonadotropic hormone, but indicated that this equine gonadotropic hormone was in many respects different from the anterior pituitary-like sex hormone of human pregnancy urine.

EQUINE GONADOTROPIC HORMONE

The equine gonadotropic hormone was shown to have a characteristic biological reaction similar to that of the anterior pituitary complex itself. Administration of proper dosage to infantile female rodents produced follicle growth, ovulation and corpora lutea in the manner and sequence found in adult females; in fact, young rats (twenty-eight days old) were bred three days following an injection and became pregnant.[4]

On the administration to ewes of sufficient amounts of the hormone at proper time intervals, Cole and Miller[5] found that estrum, ovulation, and impregnation would result, following breeding during the anestrous period. They also demonstrated that it would produce ovulation in the sow, mare, and other higher animals.

Gonadotropic hormone is found during pregnancy in the blood of the human female, the mare, zebra, giraffe, and some other primates.

The primary difference between the equine gonadotropic hormone and the chorionic hormone

---

* Read before the Obstetrics and Gynecology Section of the California Medical Association at the sixty-eighth annual session, Del Monte, May 1–4, 1939.

TABLE 1.—*Miscellaneous Data in 135 Cases*

Menstrual Disturbances	No. of Cases	Duration of Disturbance	Duration of Treatment	Not Improved		Improved		Cured	
				No.	Per Cent	No.	Per Cent	No.	Per Cent
Amenorrhea, primary	4	Ages 21 to 25 years	Six months	1	25.0	2	50.0	1	25.0
Amenorrhea, secondary	6	Twelve to 24 months	Four to six months	0	0.0	2	33.3	4	66.7
Hypomenorrhea (under age 30)	37	Six months to ten years	Two to eight months	6	16.0	11	30.0	20	54.0
Hypomenorrhea (ages 30 to 40)	64	Six months to fifteen years	Two to eight months	6	9.3	24	37.3	34	53.1
Oligomenorrhea	33	Six months to three years	Two to eight months	5	15.1	10	30.3	18	54.5
Menometrorrhagia	16	Three months to three years	Two to six months	1	6.25	3	18.75	12	75.0
Dysmenorrhea	32	Six months to fifteen years	Two to eight months	2	6.25	8	25.0	22	68.75

from pregnancy urine becomes evident in their effects upon hypophysectomized animals: chorionic gonadotropic hormone has little, if any, effect on the gonads,[6,7] while the equine hormone restores complete normal functions in ovaries atrophied by hypophysectomy.[8]

CLINICAL STUDY

These various animal experiments indicated that this gonadotropic hormone might be valuable for clinical use. Purification of the hormone, to a degree that it would be unlikely to produce foreign protein reactions, made its clinical use in the human possible. The extent of the purification may best be illustrated by the fact that the hormone solution contains less than one half of one per cent of the amount of serum protein found in any previous commercial serum preparation.

The series herein reported consists of 135 patients. These have been divided into three groups: (1) menstrual disturbances; (2) genital hypoplasia; and (3) sterility. A number of patients necessarily fall into more than one group. For example, a patient whose primary complaint was sterility may also have had associated dysmenorrhea or hypomenorrhea; and one who complained of the subjective symptoms of estrogen deficiency might also have had genital hypoplasia, dysmenorrhea or oligomenorrhea.

DIAGNOSIS

The diagnosis in the majority of cases is evident after a careful history and physical examination. The vaginal smear method of Papanicalaou[9] is valuable in determining the degree of ovarian deficiency, and has been used in nearly all cases as a diagnostic aid, and to evaluate the results of therapy.

Endometrial biopsies have been obtained in the majority of patients. It is difficult to correlate menstrual disturbances with endometrial studies, and my findings agree with Kotz and Parker,[10] who conclude that there are no specific endometrial patterns for gynecological symptoms. However, a study of the endometrium may be of value in determining the effects of treatment.

Sterility cases have been fully investigated. The examination included a tubal patency test, a basal metabolism rate determination, and an examination of the husband instituted before treatment.

DOSAGE

The rat unit, as suggested by the discoverers of the hormone, and described by Cole and Saunders,[11] is the amount which, ninety-six hours after a single injection, will cause the development of an average of three to ten follicles, or corpora lutea in a group of five, twenty-one to twenty-three-day old female rats.

It has been found that the ovarian weight, rather than the body weight of the animal is the criterion for determining comparative doses.[12] Ovulation is produced in the rat with one unit, the ewe with 125 units, and sow with 250 units, while 750 units are required for the cow and mare. These comparative weights suggested that 600 to 1000 rat units would be required to stimulate the ovary of the human female.

The majority of the patients in the series received 200 rat units (Cole and Saunders) of the equine gonadotropic hormone* on the seventh, eighth, and ninth days following the onset of menstruation. The average length of treatment was four months.

Estrogenic hormone was administered to all patients with amenorrhea, hypomenorrhea, oligomenorrhea, genital hypoplasia, and to some of those with sterility, previous to the treatment with the equine gonadotropic hormone. Two to ten thousand rat units of estradiol benzoate (Progynon B) were administered every three to five days during the postmenstrual and intermenstrual phases over a period of one to two cycles, or until a normal vaginal smear was obtained.

The menstrual disturbances are outlined in Table 1. It will be noted that the largest group

* "Gonadin" supplied through the courtesy of the Cutter Laboratories, Berkeley, California.

TABLE 2.—*Data in Forty-three Cases of Sterility*

Menstruation	No. of Cases	Duration of Sterility	Pregnancies	Per Cent
Apparently normal	14	3 to 7 years=4 cases 7 to 10 years=7 cases 10 to 17 years=3 cases	10	71.3
Dysmenorrhea	8	5 to 7 years=5 cases 7 to 9 years=3 cases	6	75
Hypomenorrhea	8	5 to 7 years=4 cases 7 to 10 years=3 cases 10 to 17 years=1 case	5	62.5
Oligomenorrhea	7	5 to 7 years=5 cases 7 to 10 years=2 cases	2	28.6
Menometrorrhagia	3	3 to 5 years=3 cases	1	33.3
Amenorrhea, secondary	2	5 years=2 cases	0	0
Amenorrhea, primary	1	6 years=1 case	0	0
Total cases 43		Total pregnancies 24		55.8%

comprised those with hypomenorrhea. These are divided into two age groups, and there was little difference in the response obtained. In the younger patients 54.0 per cent were cured, while in the older women 53.1 per cent were benefited.

Genital hypoplasia accompanied all cases of primary amenorrhea and one-third of those with secondary amenorrhea. Primary amenorrhea is not common, and in the four cases, whose ages ranged from twenty-one to twenty-five years, one was cured. Two were improved, but the oldest patient did not respond after six months of treatment. Of the six patients treated for secondary amenorrhea, four menstruated normally after four to six months of treatment and have maintained normal menstruation without further therapy. The two remaining patients menstruated following treatment, but have required continued treatment to maintain their cycles.

Menorrhagia and metrorrhagia are included under the term "menometrorrhagia." Where excessive bleeding is due to a persistent follicle, good results should be obtained with a hormone which is capable of follicle stimulation. Twelve women (75.0 per cent) responded to treatment by a decrease in the amount of menstrual flow to that which is commonly considered to be normal.

Regulation of the menstrual cycle was accomplished in eighteen (54.4 per cent) of the thirty-three women with irregular menstruation. These have all remained regular without further therapy during an observation period of from nine to fifteen months. Though they are menstruating regularly at the present time, the ten classified as improved have not been observed for a sufficient period to consider them permanently relieved.

Over 68 per cent of the dysmenorrheic women were relieved after the administration of equine gonadotropic hormone. It is not known at the present writing how long this relief will continue. However, twelve patients have been free from dysmenorrhea for as long as ten months without further treatment.

Seventeen patients had genital hypoplasia. Some had small external genitalia, narrow vaginas, and uteri under normal size, while others seemed normal except for uterine hypoplasia. Three of the former group were not improved. Six (35.2 per cent) were improved, but had to remain under hormone treatment to maintain regular menstruation. Eight (47.0 per cent) are classified as cured because they developed normal genitalia, had normal menstrual periods, and maintained normal vaginal smears without further treatment.

Twenty-four (55.8 per cent) of the forty-three cases of sterility became pregnant after the administration of equine gonadotropic hormone. It is noteworthy that two of these had been sterile for more than fifteen years, and both conceived and carried to term. The remainder complained of sterility for from three to twelve years. Three of the twenty-four pregnancies were lost before full term: one at six months because of placenta praevia, one miscarriage at three months, and one abortion at nine weeks. There were no fetal malformations or stillbirths.

COMMENTS

Bowes,[13] in a preliminary clinical report, has shown that 80 per cent of his cases of amenorrhea have benefited by the administration of equine gonadotropic hormone. Davis and Koff[14] have reported the experimental production of ovulation in the human female by administration of this hormone.

The physiologic production of gonadotropic hormone of the anterior lobe of the pituitary gland is gradual over a period of a number of days, allowing adequate growth and maturation of the follicle. Therefore, it seems preferable to divide the total dose over a period of several days rather than to

TABLE 3.—*Summary of Results*

	Not Improved	Improved	Cured
Menstrual disturbances	11%	31%	58%
Genital hypoplasia	17%	35%	47%
Sterility			55.8%

administer one large dose. It is possible that a higher percentage of good results may be obtained by varying the dose according to the initial response. However, in this series the hormone was used in approximately the same dose, at the same period each month, in order to evaluate this method of administration.

Two to four months of treatment is the average amount commonly required. Some patients may be benefited after the initial course of therapy, but stimulation of the ovaries for only one cycle is usually insufficient for the maintenance of normal ovarian function. Therapy, therefore, should be continued even after menstruation seems to be normal.

Many of the improved patients have not maintained normal function longer than one or two periods and have required further treatment. Also, it is not known how long some of the patients classified as cured will continue to menstruate normally.

There are a number of patients who have shown no evidences of improvement, and when the ovaries of some of these were subsequently examined at operation, they were found to be small, white, and atretic. This type has not shown improvement with any form of treatment.

Although many of the premenopausal patients have responded with normal menstrual functions, it is apparently quite useless to expect satisfactory improvement in the nonfunctioning ovaries of women at the menopause.

The amount of menstrual bleeding is not an accurate criterion for evaluation of ovarian function. The woman who uses three pads per month and the one who uses three dozen are both manifestations of lowered ovarian function. Also, a woman may use twelve pads and menstruate four days, and yet show objective signs of ovarian hypofunction. The atrophic vaginal smear, an abnormal endometrial biopsy, underdeveloped breasts and genitalia, are all evidences of underfunction of the ovaries.

Two patients have had serum reactions. Both of these had urticaria at previous times, and both developed a mild generalized urticaria after three doses of equine gonadotropic hormone. An occasional local reaction at the site of injection was noted.

SUMMARY AND CONCLUSIONS

The historical and experimental data on equine gonadotropic hormone are briefly reviewed. The fundamental differences between equine gonadotropic hormone and the anterior pituitary-like sex hormone from pregnancy urine are noted.

In a series of 135 cases which received equine gonadotropic hormone, there were 57.6 per cent cures in patients with menstrual disturbances, 47.0 per cent of those with genital hypoplasia were cured, and 55.8 per cent who were treated for sterility became pregnant.

Equine gonadotropic hormone is sufficiently free from serum protein for use in the human, and is the most valuable gonadotropic hormone thus far available for the treatment of menstrual disorders and functional sterility in the female.

628 Medico-Dental Building.

REFERENCES

1. Aschheim, S., and Zondek, B.: Klin. Wchnschr., 7:1404, 1928.

2. Cole, H. H., and Hart, G. H.: Am. J. Physiol., 93:57, 1930.

3. Evans, H. M.: West. J. Surg., Gynec., and Obst., 44:175, 1936.

4. Cole, H. H.: Am. J. Physiol., 119:704, 1937.

5. Cole, H. H., and Miller, R. F.: Am. J. Physiol., 104: 165, 1933.

6. Fluhmann, C. F.: Am. J. Obst. and Gynec., 28:668, 1934.

7. Reichert, F. L., Pencharz, R. I., and Simpson, M. E., Meyer, K., and Evans, H. M.: Proc. Soc. Exp. Biol. and Med., 28:843, 1931; Am. J. Physiol., 100:157, 1932.

8. Evans, H. M., Meyer, K., and Simpson, M. D., et al.: Memoirs Univ. of Calif., No. 11, 1933.

9. Papanicalaou, G. N.: Am. J. Anat., 52:519 (supp.), 1933.

10. Kotz, J., and Parker, E.: Endocrinology, 24:447 (April), 1939.

11. Cole, H. H., and Saunders, F. J.: Endocrinology, 19:2, 1935.

12. Hart, G. H., and Cole, H. H.: Record of proceedings of annual meeting of American Society of Animal Production, 1933.

13. Bowes, Kenneth: Brit. M. J. (Nov. 6), 1937.

14. Davis, M. E., and Koff, A. K.: Am. J. Obst. and Gynec., 36:183 (Aug.), 1938.

DISCUSSION

L. F. HAWKINSON, M. D. (445 Thirtieth Street, Oakland).—During the past twenty months I have used equine gonadotropic hormone in ninety-three cases of menstrual disturbances and sterility. The results, too often poor, with other gonadotropic preparations made me extremely skeptical about another new product. However, the fact that this hormone had been used with marked success in the veterinary field for a period of over four years offered some hope that it would stimulate the ovaries of a human female.

My results, on the whole, compare with those of Doctor Hall. In a group of thirty-one carefully selected sterility patients, 45.1 per cent became pregnant. How many of these women would have become pregnant without treatment is, of course, unknown. However, when a woman who has been sterile for five to fifteen years becomes pregnant following one to four series of injections of equine gonadotropic hormone, it hardly seems coincidental. Over 45 per cent of the dysmenorrheic women were relieved of pain. However, four, or 13.9 per cent, of those with dysmenorrhea reported that their pain became considerably worse following treatment. All of these were patients with uterine hypoplasia.

The administration of estrogenic hormone previous to the equine gonadotropic hormone seems to be indicated in many cases. One must remember that two problems are involved: the responsiveness of the ovaries to gonadotropic stimulation, and the receptiveness of the uterus to the ovarian hormones. Estrogen seems to increase the receptiveness and, thereby, allows the estrogenic and corpus luteum hormones to exert their effect on the endometrium.

In my opinion, patients with primary hypogonadism and uterine hypoplasia should first be treated with sufficient amounts of estrogenic hormone to increase the uterus to near normal size. This eliminates the possibility of causing ovarian damage by overstimulation.

Whether or not Davis and Koff were correct in their assumption that they produced ovulation in their patients, the fact remains that there is undeniable evidence that ovarian stimulation results from the injection of equine gonadotropic hormone. Definite symptoms of ovulation, control of excessive flow, increased flow in patients with

scanty menstruation, and a change in the premenstrual endometrium from an interval type to a secretory phase, are strong evidences that stimulation of the ovaries has been accomplished. Of course, one cannot expect to stimulate ovaries incapable of functioning.

My dosage has been somewhat larger than that used by Doctor Hall. The majority of patients received 200 Cole-Saunders units or 20 Cartland units, for five doses, beginning the fourth or fifth day after the onset of menstruation. The injections were given daily, or every other day, depending upon the length of the cycle. The last dose was given before ovulation is assumed to occur.

Skin tests have not been used prior to the administration of the hormone. The necessity of skin testing seemed to be obviated after demonstrating that rabbits, previously sensitized with injections of Gonadin, showed no evidences of serum protein reaction after injection of one cubic centimeter of Gonadin intravenously.

❀

SHELDON A. PAYNE, M. D. (921 Westwood Boulevard, Los Angeles).—We may rightly conclude from Doctor Hall's work that the gonadotropic hormone from the serum of pregnant mares is the most potent hormone of that kind available, and that some of the results may be spectacular. Also, in obtaining such unusually good results, it is apparent that Doctor Hall not only has had at his disposal a more potent endocrine preparation, but that his cases have been selected with considerable care. Only by careful discrimination can the results of such therapy be evaluated.

Before deciding on treatment it is only logical to attempt to determine the gland primarily at fault. Hormone assays and endometrial biopsies are valuable aids in diagnosis. In cases with ovarian failure, the endometrial biopsy is almost indispensable in evaluating treatment, since the ovarian activity is mirrored in the endometrial picture. The test for urinary pregnandial is helpful in determining ovulation.

In the treatment of menstrual dysfunctions we have found it necessary, in many cases, to use more intensive therapy than reported here, hence many of our patients received 200 to 400 Cole-Saunders rat units three or four times a week for several weeks. This more intensive therapy seemed to be indicated, since, in many instances, the endometrial biopsies, while under treatment, showed an arrested estrin or persistent estrin effect, even though several were enjoying regular uterine bleeding. In some of these cases the endometrium later became secretory. Dysmenorrhea was commonly associated with the anovulatory cycles, disappearing when a secretory type of premenstrual endometrium became established. It is coming to be recognized more and more that anovulatory cycles are very common in young girls as the menstrual cycles are becoming established, and we feel that this process may be reproduced by treatment. Some patients respond very quickly to the mare's serum hormone, the endometrium changing from an atrophic, persistent estrin, etc., to a secretory type during the first menstrual cycle.

Many of Doctor Hall's patients received considerable estrogenic treatment the month or two before gonadotropic hormone was given. Since estrogenic substances alone have been used in such cases with some degree of success, one might question, in evaluating the results, what rôle the estrogenic substance had played?

There is no doubt that the mare's serum hormone is a potent ovarian stimulant. It offers new hope in the treatment of genital hypoplasia, in the treatment of menstrual disturbances, and particularly in the treatment of sterility due to failure of ovulation. However, our enthusiasm should be tempered by our experience with other gonadotropic hormones, which have come with great promises from the experimental laboratories, but have fallen under expectations when put to the clinical test. There is still much experimental work to be done, and the method of administration, the dosage and dosage intervals, etc., are yet to be determined.

SULFANILAMIDE AND SULFAPYRIDIN IN THE TREATMENT OF VARIOUS INFECTIONS*

FACTORS INFLUENCING PROGNOSIS IN PNEUMONIA

By CHESTER S. KEEFER, M. D.
Boston, Massachusetts

PART II†

IN appraising the results of sulfanilamide and sulfapyridin therapy, it is well to remember the various factors concerned in the prognosis of pneumococcic pneumonia. There are so many variables that are operative in this disease that it is exceedingly difficult, on a basis of gross fatality statistics, to be certain that any form of treatment influences either the course of the disease or the fatality rate even when large numbers of cases are studied. One should include all cases in any study, and then break down the statistics and explain the deaths rather than exclude certain cases at the outset. If one singles out and analyzes various factors in treated cases, and compares the results in cases presenting comparable features without treatment, then certain opinions can be developed concerning the value of any form of treatment. In any case, it is necessary to correlate the variables and determine whether or not the particular form of treatment has reduced the fatality rate or altered the course of the disease in a significant number of cases before one can be certain that the particular form of treatment has been responsible for any difference.

In assessing any group of cases of pneumonia, then, it is necessary to take into account the following factors, which are known to influence both the fatality rate and the duration of the illness. They are listed in Table 2.

TABLE 2.—*Significant Prognostic Factors in Pneumonia*

1. Age
2. Bacteremia
3. Type of pneumococcus and their relative frequency in any group
4. Race and type of work
5. Number of lobes involved
6. Leukocyte count
7. Focal infections
8. Debilitating diseases
9. Mixed infections
10. Pregnancy
11. Alcoholism
12. Miscellaneous features
    - *a.* Degree of cyanosis
    - *b.* Delirium
    - *c.* Abdominal distention
    - *d.* Jaundice
    - *e.* Pulmonary edema

Of all the factors listed in the table, the three most important are (1) the age of the patient, (2) bacteremia, and (3) the type of infecting

* From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School, Boston.

Guest Speaker's paper, read before a joint meeting of the sections on General Medicine and General Surgery of the California Medical Association at the sixty-eighth annual session, Del Monte, May 1–4, 1939.

† Part I of this paper appeared in the August issue of CALIFORNIA AND WESTERN MEDICINE, on page 81; discussion comment on "Results of Treatment of Pneumonia with Sulfapyridin," in the same issue, on page 143.